
Recovery outcomes after bariatric surgery: Is laparoscopic roux en Y gastric bypass better than laparoscopic sleeve gastrectomy?

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ABSTRACT

Background: To compare early recovery outcomes after bariatric surgery

Methods: This single-center retrospective comparative study was conducted in the general surgery unit of King Hussein Royal Medical Centre, Amman, Jordan. Consecutive patients who underwent bariatric surgery from June 1, 2018, to June 30, 2020, were included. Only patients who underwent LRYGB or LSG were included. We collected information on age, sex, preoperative body mass index, comorbidities, presence of gastroesophageal reflux disease, type of surgery, drainage during surgery, mean postoperative pain scores determined using the numeric rating system, day of postoperative ambulation, and duration of hospital stay. Data were analyzed using SPSS version 26

Results: A total of 293 patients underwent bariatric surgery during the study period. However, only 280 met the inclusion criteria. Out of these, 180 underwent LSG (Group A) and 100 received LRYGB (Group B). The male-to-female ratio was 1:1.8. Our findings showed that patients who underwent LRYGB had superior outcomes in terms of postoperative pain. Furthermore, patients who had LRYGB attained full ambulation earlier than those who received LSG.

Conclusion: Our results revealed that LRYGB is associated with less pain, shorter duration of abdominal drainage, and early ambulation when compared with LSG.

Keywords: bariatric surgery, sleeve gastrectomy, gastric bypass

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Introduction

Over the last few decades, obesity has become a prevalent public health and socioeconomic problem affecting a substantial percentage of the population, reducing the quality of life and life expectancy 1–3. With the increasing prevalence of obesity and the fact that most of the treatment options available for obesity are not associated with sustained weight loss, surgery has gained widespread acceptance as a therapeutic option for the treatment of morbid obesity. Surgery has been associated with sustained weight loss and the resolution of comorbidities 4–7. Surgical options for obesity include laparoscopic Roux-en-Y gastric bypass

(LRYGB), biliopancreatic diversion/duodenal switch (BPD/DS), laparoscopic vertical banded gastroplasty (VBG), laparoscopic sleeve gastrectomy (LSG), laparoscopic adjustable gastric banding (AGB), and single-anastomosis duodenoileal bypass (SADI) ^{5,8,9}. Among all these techniques, LRYGB and LSG have been the most widely used and the most studied procedures ^{10,11}. Over the last decade, the use of LSG has tended to increase, whereas that of LRYGB has declined. This is because compared with LRYGB, LSG is easier to use, faster to perform, and safer. However, some studies have reported that LRYGB is more

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potent than LSG¹¹⁻¹³. Although multiple studies have compared the immediate outcomes of LRYGB and LSG, they have reported conflicting results. Some studies have demonstrated greater weight loss with LRYGB than with LSG, whereas other studies have observed no difference in weight loss when comparing between LSG and LRYGB^{11,12,14,15}. Studies have also compared the quality of life after surgery, reporting conflicting results^{11,12,14,15}. This study compared the early outcomes of LRYGB with those of LSG among patients who had surgery in our center.

Methods

This single-center, retrospective, comparative study was conducted at the general surgery unit of King Hussein Royal Medical Centre, Amman, Jordan. Consecutive patients who underwent bariatric surgery from June 1, 2018, to June 30, 2020, were included in the study. Only patients who underwent LRYGB or LSG were included. Patients with incomplete medical records and those who converted to open surgery were excluded. Ethical approval was obtained from the Ethical Committee of King Hussein Royal Medical Centre, Amman, Jordan, before the study commenced.

Data were collected retrospectively by retrieving patients' records from the hospital database. The following data were obtained: age, sex, preoperative body mass index, comorbidities, presence of gastroesophageal reflux disease (GERD), type of surgery, drainage during surgery, mean postoperative pain scores determined using the numeric rating system (NRS)¹⁶, day of postoperative ambulation, and duration of hospital stay. Patients were divided into 2 groups: Group A consisted of patients who underwent LRYGB and Group B consisted of patients who underwent LSG. Data were analyzed

using SPSS version 26. Qualitative variables were summarized using ratios and percentages, whereas quantitative variables were summarized using measures of central tendencies (such as means and medians) and measures of dispersion (such as standard deviations [SDs] and ranges). The association between the type of surgery and outcomes was assessed using the chi-square test, while continuous variables were compared using Wilcoxon rank sum (Mann-Whitney U) test if data deviated from normality and t-test if data was normally distributed based on Shapiro-Wilk test. A p value of less than 0.05 was considered significant.

Results

A total of 293 patients underwent bariatric surgery during the study period. However, only 280 met the inclusion criteria. Out of the 280 included in the study, 180 (64.29%) underwent LRYGB (Group A), while 100 (35.71%) received LSG (Group B). The overall median age of the patients was 34.0 (14.0) years. The overall male-to-female ratio was 55:206, and the mean preoperative BMI was 44.8 kg/m². The most common comorbidity was type 2 diabetes mellitus (DM), which was observed in 72 (40%) patients, followed by hypertension, which was noted in 59 (32.7%) patients. Other comorbidities included GERD, which was observed in 40 (22%) patients. The sociodemographic characteristics and presence of comorbidities were compared between the two groups, and no significant differences were observed (**Table 1**). Intraoperative parameters were also compared between the two groups. We found that the LSG group was more likely to require blood transfusion during surgery compared with the LRYGB group. Furthermore, LSG was associated with shorter operation time,

but longer hospital stays (Table 2). We compared early postoperative outcomes and found that the LRYGB group had a significantly lower pain score (median: 3.06 vs. 6.20, $p < 0.001$) than did the LSG group. Furthermore, the LRYGB group achieved full ambulation earlier than the LSG group ($p < 0.001$). The duration of drainage after surgery was shorter in the LRYGB group than in the LSG group. The details of these findings are displayed in Table 3. A visual representation of the significant differences between the two surgical procedures is shown in Figure 1.

Discussion

Obesity is a multifaceted and intricate condition affected by both genetic and environmental factors, perpetuated by prolonged energy imbalance, and exacerbated by the accumulation of excess fat in the body. The global prevalence of obesity has tripled since the mid-1970s¹. With the increasing prevalence of obesity, there is also an increase in understanding the condition and its treatment. The options available for obesity treatment include dietary, pharmacological, and surgical interventions. Bariatric surgery is the most common treatment option considered when all other efforts have failed. Compared with nonsurgical interventions, bariatric surgery is associated with superior weight loss and resolution of associated comorbidities^{5,8–10}. The Swedish Obesity Study (SOS) reported a 72% remission rate in patients with type II DM after 2 years¹⁷. Numerous randomized controlled trials have indicated that bariatric surgery offers superior long-term results in terms of weight reduction and the resolution of diabetes when compared with medical interventions^{17–19}. Surgical options for obesity include LRYGB, BPD/DS, VBG, LSG, AGB, and SADI. Among all these techniques LRYGB and LSG have been the most commonly performed and most studied

procedures. These procedures are safe and are associated with weight reduction and resolution of comorbidities during long-term follow-up^{5,7–11,17–19}. Multiple studies have compared the short-term outcomes of LRYGB and LSG, showing that the operative time and hospital stay were longer among patients who underwent LRYGB. Li et al. and Peterli et al. have reported that the complication rate was higher in the LRYGB group than in the LSG group^{20,21}. In addition, Vidal et al. reported that patients who underwent LRYGB during surgery were more likely to require blood transfusion compared with those who underwent LSG²². Our findings revealed that patients who underwent LSG had shorter operation time, required more transfusions during surgery, and tended to stay longer in the hospital than those who underwent LRYGB. These findings suggest that while LRYGB may have more favorable postoperative outcomes, the choice of procedure might also consider factors like operation time and hospital stay. The significance of perioperative care cannot be overstated especially with the introduction of the ERAS protocol, which has demonstrated its feasibility and effectiveness in facilitating early discharge following bariatric surgery. When bariatric procedures were appropriately performed, over 40% of patients could be discharged within 24 hours of the surgical intervention^{23,24}. In our study, we compared early postoperative outcomes between the two groups and found that patients who underwent LRYGB had lower pain scores, shorter duration of abdominal drainage, and earlier ambulation than did patients who underwent LSG. Our study has several strengths. It addresses an important clinical question related to the comparison between LRYGB and LSG, which are commonly performed in bariatric surgeries. Our findings have direct

Tables and Figures:

Table 1: Comparison of Sociodemographic, anthropometry, and comorbidities

S/N	Parameter	LRYGB=180	LSG=100	P-value
1	Age (median (IQR))	35.0 (14.0)	33.5 (14.25)	1
2	Females, n (%)	127 (79%)	79 (79%)	0.163
3	Diabetes mellitus	37 (21%)	35 (35%)	0.008
4	Hypertension	32 (18%)	27 (27%)	0.07
5	GERD	21 (12%)	19 (19%)	0.093

SD= standard deviation, LSG= laparoscopic sleeve gastrectomy, LRYGB= laparoscopic roux en y gastric bypass, GERD= gastroesophageal reflux disease

Table 2: Comparison of intraoperative parameters

S/N	Parameter	LRYGB=180	LSG=100	P-value
1	Operation time in minutes (median)	145.78 (27.77)	84.39 (22.10)	<0.001
2	Blood Transfusion during surgery	4 (2%)	7 (7%)	0.059
3	Hospital Stay in days (median)	5.93 (4.90)	9.09 (5.86)	<0.001

SD= standard deviation, LSG= laparoscopic sleeve gastrectomy, LRYGB= laparoscopic roux en y gastric bypass

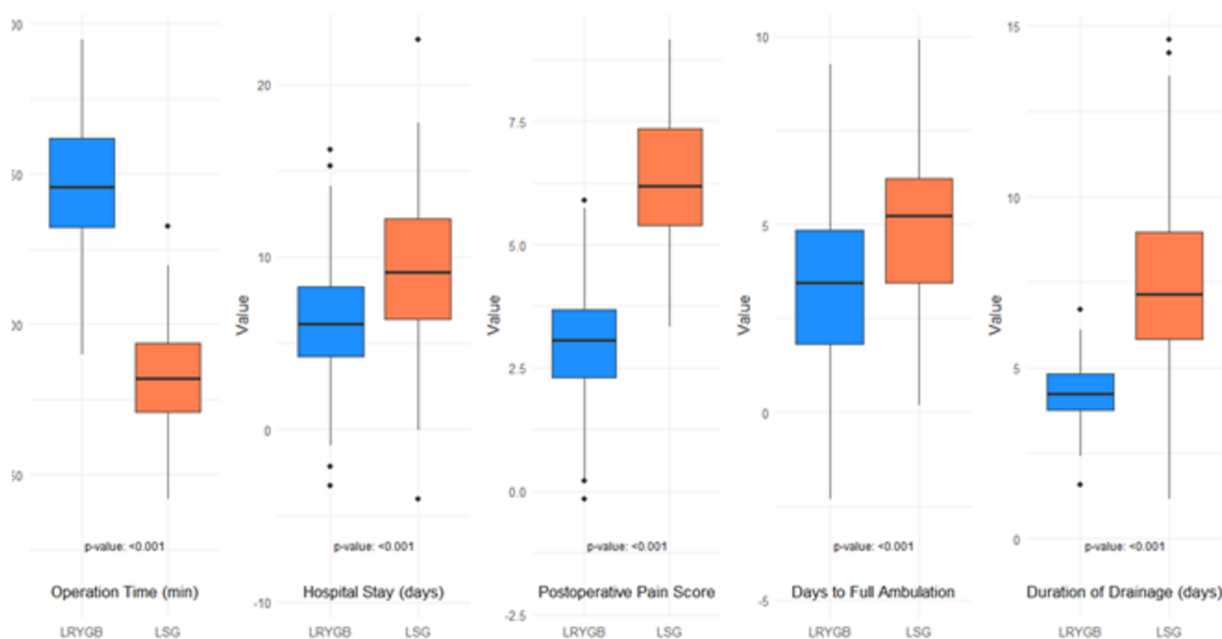
Table 3: Comparison of Early postoperative parameters

S/N	Parameter	LRYGB=180	LSG=100	P-value
1	Mean postoperative pain score (Median (IQR))	3.06 (1.36)	6.20 (1.70)	<0.001
2	The mean number of days to full ambulation after surgery (mean ± SD)	3.16 ± 2.1	5.12 ± 1.8	<0.001*
3	Duration of drainage in days (median (IQR))	4.36 (1.15)	7.74 (3.44)	<0.001

SD= standard deviation, LSG= laparoscopic sleeve gastrectomy, LRYGB= laparoscopic roux en y gastric bypass

*Two-sample T-test as Shapiro-wilk normality test >0.05

Figure 1: Boxplots representing significant differences between laparoscopic sleeve gastrectomy (LSG) and laparoscopic roux-en-y gastric bypass (LRYGB).



implications for surgical decision-making in the management of obesity and its associated comorbidities. However, our findings should be interpreted carefully because of several limitations. First, conducting research in a single center may restrict the diversity of patient characteristics and clinical practices, potentially affecting the generalizability of the results to a wider population. Second, our study primarily focused on early postoperative outcomes, and the long-term effects of the two surgical techniques were not examined. Longer-term follow-up can provide a more comprehensive understanding of outcomes associated with LRYGB and LSG. Third, the generalizability of the findings are limited due to the retrospective nature of the study. Furthermore, evaluating the cost-effectiveness of these surgeries in addition to clinical outcomes can provide a comprehensive perspective for both clinicians and healthcare policymakers. We also advise researchers to investigate these outcomes in multi-center settings and consider longer follow-up periods with their patients.

Conclusion

Our study compared LRYGB and LSG

and provided valuable insights into the intraoperative and early postoperative outcomes of patients undergoing LRYGB compared with LSG. The findings revealed that LSG patients were more likely to require a blood transfusion during surgery, indicative of potentially higher surgical complexity. Furthermore, LSG was associated with longer operation times and extended hospital stays, underscoring the importance of considering these factors in the decision-making process for bariatric surgery.

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